

WHAT IS CLAIMED IS

5

1. A buffer unit for fragmenting variable-length packets into fixed-length packets for processing in units of fixed-length packets, comprising:

10 fixed-length packet storing means for storing the fixed-length packets for each of output paths;

multicasting processing means for storing multicasting packets having a plurality of destinations, and transferring the multicasting packets to said fixed-length packet storing means depending on the plurality of destinations; and

15 control means for monitoring a storage state of said fixed-length packet storing means, and carrying out a control so that the multicasting packets are transferred within a variable-length packet formed by a plurality of fixed-length packets.

25

2. The buffer unit as claimed in claim 1, further comprising:

multicasting packet storing means for storing the multicasting packets having the plurality of destinations, and transferring the plurality of multicasting packets to said multicasting processing means after a plurality of multicasting packets forming a single variable-length packet are received.

35

3. The buffer unit as claimed in claim 2,
wherein said multicasting packet storing means
cancels the single variable-length packet when a
defect is detected in one of the fixed-length
5 packets or the multicasting packets forming the
single variable-length packet.

10

4. A buffer unit for fragmenting
variable-length packets into fixed-length packets
for processing in units of fixed-length packets,
comprising:

15 fixed-length packet storing means, including
first and second packet storing sections, for
storing the fixed-length packets for each of output
paths;

multicasting processing means for storing
20 multicasting packets having a plurality of
destinations, and transferring the multicasting
packets to said second packet storing section
depending on the plurality of destinations; and

control means for monitoring a storage state of
25 one of said first and second packet storing sections,
and carrying out a control so that reading from said
first and second packet storing sections is switched
in units of a variable-length packet which is formed
by a plurality of fixed-length packets.

30

5. The buffer unit as claimed in claim 4,
35 further comprising:

multicasting packet storing means for storing
the multicasting packets having the plurality of

destinations, and transferring the plurality of multicasting packets to said multicasting processing means after a plurality of multicasting packets forming a single variable-length packet are received.

5

6. The buffer unit as claimed in claim 5,
10 wherein said multicasting packet storing means cancels the single variable-length packet when a defect is detected in one of the fixed-length packets or the multicasting packets forming the variable-length packet.

15

7. A buffer unit for fragmenting
20 variable-length packets into fixed-length packets for processing in units of fixed-length packets, comprising:

temporary storing means for storing the fixed-length packets and outputting a plurality of fixed-length packets forming a single variable-length
25 packet after the plurality of fixed-length packets are received;

fixed-length packet storing means for storing the plurality of fixed-length packets output from
30 said temporary storing means for each of output paths; and

multicasting processing means for storing multicasting packets having a plurality of destinations, and transferring the multicasting
35 packets to said fixed-length packet storing means depending on the plurality of destinations.

8. The buffer unit as claimed in claim 7, further comprising:

multicasting packet storing means for storing the multicasting packets having the plurality of destinations, and transferring the plurality of multicasting packets to said multicasting processing means after a plurality of multicasting packets forming a single variable-length packet are received.

10

9. The buffer unit as claimed in claim 8, wherein one of said temporary storing means and said multicasting packet storing means cancels the single variable-length packet when a defect is detected in one of the fixed-length packets or the multicasting packets forming the single variable-length packet.

20

10. A buffer unit for fragmenting variable-length packets into fixed-length packets for processing in units of fixed-length packets, comprising:

packet storing means for storing the fixed length packets;

fixed-length packet storing means for storing stored addresses of the fixed-length packets for each of output paths;

multicasting processing means for storing stored addresses of multicasting packets having a plurality of destinations, and transferring virtual addresses corresponding to the stored addresses of the multicasting packets to said fixed-length packet storing means depending on the plurality of

destinations; and

queue length managing means for managing a first sum total of a number of addresses and a number of virtual addresses stored in said fixed-length packet storing means for each of the output paths, and a second sum total of the number of addresses and a number of the addresses of the multicasting packets,

said first sum total being used for packet cancel control, said second sum total being used for packet contention control.

15

11. A buffer unit for fragmenting variable-length packets into fixed-length packets for processing in units of fixed-length packets, comprising:

20

first storing means for storing the fixed-length packets, and outputting a plurality of fixed-length packets forming a single variable-length packet when the plurality of fixed-length packets are received;

25

second storing means for storing the plurality of fixed-length packets output from said first storing means for each of output paths; and

30

multicasting processing means for storing multicasting packets having a plurality of destinations, and transferring the multicasting packets to said second storing section depending on the plurality of destinations,

35

outputs of said first storing means and said multicasting processing means being switched in units of a variable-length packet which is formed by a plurality of fixed-length packets.

12. A switching apparatus for fragmenting variable-length packets into fixed-length packets for processing in units of fixed-length packets, comprising:

- 5 an input buffer section receiving multicasting packets having a plurality of destinations or unicasting packets having a single destination;
 - a switching section switching the multicasting packets or the unicasting packets received from said
 - 10 input buffer section depending on the destination of each packet; and
 - an output buffer section receiving fixed-length packets from said switching section depending on output paths, and defragmenting the fixed-length
 - 15 packets into the variable-length packets,
 - said input buffer section outputting a plurality of fixed-length packets in units of a variable-length packet which is formed by a plurality of fixed-length packets.

20

- 13. The switching apparatus as claimed in
- 25 claim 12, wherein said input buffer section comprises:

- fixed-length packet storing means for storing the fixed-length packets for each of output paths;
- multicasting processing means for storing
- 30 multicasting packets having a plurality of destinations, and transferring the multicasting packets to said fixed-length packet storing means depending on the plurality of destinations; and
- control means for monitoring a storage state of
- 35 said fixed-length packet storing means, and carrying out a control so that the multicasting packets are transferred within a variable-length packet formed

by a plurality of fixed-length packets.

5

10

15

20

25

30

35